

# THE REDUCTION EN MASSE OF STRANGULATED AND NON-STRANGULATED HERNIÆ.

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THERE are certain clinical events which are of sufficient rarity to occur perhaps only once or twice in the practice of any one man. No one in consequence has sufficient experience of such occurrences to become an authority, and our knowledge of these subjects is only increased by collecting into a convenient form the opinions and observations of others. This must be done from time to time so as to maintain the knowledge gained from this collective investigation "up-to-date." With regard to the subject of the reduction of herniæ *en masse*, we have set ourselves the task of publishing five or six new cases and of setting forth the accumulated experience of others. But beyond this comparatively unambitious task, we desire to state the classes of case in which we think reduction *en masse* will be found of such common occurrence that every surgeon will see at least half a dozen such cases pass beneath his notice in the course of a year. Thus we would urge that events which are rare in their extreme form, are much more frequent in their lesser degrees; in fact, they may form no negligible part of the material which passes through every surgeon's hands and have been overlooked until revealed by the study of the rarer events which compel attention being given to themselves. Therefore we would urge that there is a practical lesson of frequent applicability suggested in this paper.

Reduction *en masse* has only been recognized hitherto in its acute form, viz.:—the reduction *en masse* of a strangulated hernia. A very considerable knowledge of these acute forms has collected, which we present as follows:—

#### ACUTE REDUCTION EN MASSE.

*Frequency.*—During the years 1894–1906 there were 883 cases of strangulated hernia admitted to St. Thomas' Hospital and in the same period three cases of reduction *en masse* occurred, giving the frequency as 1 in every 294 cases. At St. Bartholomew's Hospital, between the years 1890 and 1905, there were admitted 735 examples of strangulated hernia, and two of reduction *en masse*, giving a frequency of 1 in 368. Combining these figures it is found that for 1618 cases of strangulated hernia the frequency of reduction *en masse* is 1 in 331, approximately 3 per cent. In a paper<sup>1</sup> "Gangrene in Strangulated Herniæ" in St. Thomas' Hospital Reports, 1900, it was shown that 14 per cent. of the cases of strangulated hernia admitted to the hospital escaped operation by undergoing reduction; the remainder, 86 per cent., did not undergo reduction. It will therefore be appreciated that reduction *en masse* is a very rare event, because it forms only a minute percentage of the 14 per cent. of the cases admitted as strangulated herniæ in hospital practice.

In all, we examined the records of 137 examples of the reduction of a strangulated hernia *en masse*. The results of which we propose to state briefly in "Registrar Form." Unfortunately all details are not given in every case, so that the numbers do not add up to 137.

*Sex.*—Males, 110; 86 per cent. Females, 18; 14 per cent.

*Side.*—Right, 68; 64 per cent. Left, 39; 36 per cent.

*Region.*—Inguinal, 113; 83 per cent. Femoral, 22; 16 per cent. Obturator, 2; 1 per cent. Umbilical, 0.

*Results.*—Inguinal: Recovered, 59; 52 per cent. Died,

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<sup>1</sup> Edred M. Corner, Gangrene in Strangulated Herniæ, S. Thomas' Hospital Reports, 1900, pp. 341–369.

54; 48 per cent. Femoral: Recovered, 6; 28 per cent. Died, 16; 72 per cent. Obturator: Died, 2; 100 per cent.

It is a curious fact that no example of the reduction *en masse* of an umbilical or ventral hernia should have been recorded, as there is no reason why they should be exempt. The records for the inguinal herniæ differ markedly from those of the femoral variety in having a mortality of 48 per cent., as compared with 72 per cent., bearing out the fact that all through their clinical variations, femoral herniæ have a graver prognosis than do inguinal herniæ.

*Method of Reduction En Masse.*—By medical man, 50 per cent.; by patient, 28 per cent.; uncertain, 18 per cent.; spontaneously, 4 per cent.

The accident occurs most frequently through the injudicious taxis of the medical man, a grave charge. A further point of interest is that it can occur spontaneously. One of the best examples of this is recorded by Dr. Tonking of Camborne, Cornwall, England, who found the bowel reduced *en masse* from an obturator hernia when performing an abdominal section for intestinal obstruction (*Lancet*, 1904, ii, 917-918).

#### DURATION OF HERNIA PREVIOUS TO ITS REDUCTION EN MASSE.

On this point it was possible to find a statement in approximately 100 cases, enabling the accompanying table to be made up.

Within	24 hours of its appearance,	8 per cent.
Within	1 year of its appearance,	2 per cent.
Within	1-2 years of its appearance,	2 per cent.
Within	2-3 years of its appearance,	3 per cent.
Within	3-4 years of its appearance,	4 per cent.
Within	4-5 years of its appearance,	3 per cent.
Within	5-10 years of its appearance,	7 per cent.
Within	10-15 years of its appearance,	15 per cent.
Within	15-20 years of its appearance,	7 per cent.
Within	20-30 years of its appearance,	11 per cent.
	Over 30 years of its appearance,	18 per cent.
	"Years" after its appearance,	20 per cent.

The hernia in which reduction *en masse* occurred of the oldest standing was 62 years; that of the shortest was "a few hours." It would thus seem that the accident of reduction *en masse* occurs most often in herniæ of old standing but that it can take place at or shortly after the formation of the hernia. Indeed it is more frequent then than in any year up to the fifteenth or even the thirtieth during which it has been present. These early examples do not necessarily occur in the youngest subjects. For example one man was 48 years of age when he suddenly developed a hernia which was strangulated and reduced *en masse* shortly after its formation.

*Age.*—The average age for reduction *en masse* to occur was 47. The youngest subject was 13 years of age and the eldest 79.

Between 10–20 years of age, 5 per cent.

Between 20–30 years of age, 7 per cent.

Between 30–40 years of age, 19 per cent.

Between 40–50 years of age, 25 per cent.

Between 50–60 years of age, 20 per cent.

Between 60–70 years of age, 17 per cent.

Between 70–80 years of age, 7 per cent.

Thus it is the older subjects which are the most liable to this accident.

#### CONTENTS OF HERNIA.

In this series of *acute* cases the viscus which had been reduced *en masse* was almost invariably *small bowel*. In the latter part of the paper we hope to show that the *subacute* and *chronic* cases will be found amongst the herniæ which contain *omentum*, *large bowel* or *bladder*.

We now report the four examples of the condition which have been in the St. Thomas' Hospital since 1900. Two recovered, one died, and another which died also illustrates the practical difficulty of dealing successfully with a newly formed sac and a tightly strangulated partial enterocoele at an operation.

CASE I.—*Strangulated Inguinal Hernia, Reduction en masse*

by patient; *Operation, Recovery.* G. C., aged 45, stableman, admitted 22nd January, 1900, under the care of Mr. Betham Robinson. Discharged 4th February, 1900.

*Past History.*—Ten years ago had a fall which he thinks caused the rupture on the right side as the hernia came down soon afterwards. Sometimes he has had a little trouble in reducing it. He has never worn a truss.

*History of Present Illness.*—Usually on going to bed hernia went back of its own accord. On 18th January, 1900, patient found hernia "only a little way down," but it caused him considerable pain. He tried to get it back, but does not think he had any effect on it. During night he was very sick, and since this time up to time of admission has had great pain and been sick several times. On night of 18th bowels were freely opened, but had not been opened again up to the time of admission and he had not passed any flatus per rectum from that night up to the time of admission.

*On Admission.*—Patient was rather collapsed, pulse 80 and weak and respirations 24. Temperature 97.4. Extremities cold. A lump was to be felt in the abdomen in the region of the appendix, but there was very little, if any, distention. Inguinal canal empty.

*Operation.*—Incision along outer border of R. Rectus. It was found that obstruction was caused by a band of peritoneum constricting a knuckle of gut. This band was wide and firm stretching from the posterior wall of the hernial sac just within its mouth upwards, inwards and backwards to the posterior parietal peritoneum. The sac had apparently been drawn up and inverted. The constricting band was then divided. The sac was cleared of all its attachments, ligatured and cut away. During the operation the patient's condition remained good.

Jan. 23.—Condition much improved; feels quite comfortable and free from pain. Bowels have been twice opened.

Jan. 31.—Stitches removed. Healed by first intention. Since the operation patient has been quite comfortable and feeling very well. Bowels regular.

CASE II.—*Strangulated Inguinal Hernia, Reduction en masse of a partial enterocoele, Operation, Recovery.* C. C., aged 52, pointsman. Admitted 19th November, 1902, under the care of Mr. Betham Robinson. Discharged 6th December, 1902.

*History of Present Illness.*—Patient has had a rupture for ten years. On Nov. 19th patient was lifting a weight and the rupture slipped down. He attempted but failed to get it back—the pain was very great. Three hours after, a doctor saw him and, after half an hour's taxis, succeeded in reducing the hernia. He vomited three times before admission, bringing up bile colored fluid. Patient vomited three or four times while in hospital before the operation. The bowels have not been opened.

*Examination.*—There is a lump to be felt deep in the abdominal wall, opposite the internal ring. The rest of the belly is lax and moves well.

*Operation.*—Incision made parallel to Poupart's ligament on right side over external ring. External oblique divided; on dissecting further down, the sac of the hernia with its contents forced itself up. It had a distinct neck and on opening it up, was found to contain some gut. The constriction was severed, and the bowel slipped back. The bowel on inspection showed an oval area, about the size of two pennies, involving only one aspect of the bowel, which was roughened by inflammatory lymph and of a darker color than the rest. Bassini's operation. Recovery.

CASE III.—*Strangulated Inguinal Hernia, Reduction en masse by patient, Operation, Perforation of the bowel, Death.* H. M., aged 37, stone carver. Admitted 25th January, 1907, under the care of Dr. Edred M. Corner. Died 31st January, 1907.

*Past History.*—Patient has had a rupture on both sides for many years. On right side for about ten years and on the left for longer. Patient has worn a truss.

*History of Present Illness.*—Four days ago the left hernia came down when the truss was on and patient was seized with severe pain in the abdomen, and returning into the scrotum on coughing. The hernia on the right side, which was much the smaller, the patient reduced himself with difficulty on the following day, he was sick two or three times and continued to have pain, and on the fourth day, being again sick and still having abdominal pain he came up to the hospital in the evening.

*State.*—A thin and weak looking man of 37, looking older than his years and with a very alcoholic history. On the left side a large scrotal hernia, which can easily be reduced, and comes down again on coughing. On the right side there is no hernia

to be felt. Abdomen rather distended and slightly tender on palpation, though not more so in one region than another. Movement on respiration good. Furred tongue; pulse 108; respiration 30; temperature normal. Patient has passed nothing per anum except a small amount of flatus for 4 days. A simple enema was given with good result. The patient was more comfortable, the vomiting ceased, and the pulse rate fell to 96.

Jan. 26.—During the morning, patient became more uncomfortable again and started vomiting. A turpentine enema was given with no result. His pulse rate rose to 112 and he was taken up to the operating theatre at 3 P.M.

*Operation.*—A laparotomy was performed, and on opening the peritoneal cavity, collapsed small bowel was seen. It was found that a piece of small bowel was strangulated and reduced en masse in the hernial sac on the right side. The neck of the sac was cut and the piece of bowel set free. It was dark in color, and recovered somewhat in tone, the peritoneum was glistening and intact. At the two parts, where the bowel had been constricted, there was a grayish line surrounding the gut, which did not recover much on exposure. The patient's general condition was very bad, and it was impossible to undertake a resection of the damaged part of the intestine or to perform a radical cure for the hernia. The intestine was returned to the abdomen and the laparotomy wound closed.

On recovery from the anæsthetic patient was much more comfortable and four hours after the operation had a loose stool. During the next four days patient progressed favorably. He was comfortable, was not sick at all and seemed to be going on well. He had 3 or 4 stools each day, loose in character but becoming more solid, and on the 5th day he passed a formed motion. His pulse varied between 92 and 104, and his temperature remained slightly subnormal. On the fifth day soon after 4 P.M. he began to have abdominal pain. Between then and 8 P.M. he was sick four times and his pulse rose to 112. Before going up to the operating theatre it had risen to 152.

Jan. 31.—*Operation.*—It was found that the bowel had perforated at the site of one of the constricting bands. The patient's condition was too bad to undertake a resection, and the perforation was rapidly sewn up and the peritoneal cavity wiped out with dry plugs of gauze, and the abdominal wound closed up.

An intravenous infusion was performed in the ward, but the patient died about 2 hours after the operation.

*Post-Mortem Examination.*—On opening the abdomen, distended coils of gut were seen. There was a moderate amount of recent peritonitis, and lymph was seen in places glueing the coils together. The pelvis contained dark turbid fluid. The intestines were reddened and a little injected. In the ileum was a small patch of gangrenous, black intestine. It was about one inch in diameter and was attached by stitches on two sides to the gut above and below it. The gut above and below it was covered by a thin coat of lymph, but was not discolored. The small intestine above this patch was distended. Below it, the intestines were small.

CASE IV.—*Strangulated Femoral Hernio, Partial Enterocoele, Reduction en masse of the enterocoele at the operation, secondary operation, Death.* S. D., aged 39. Female. Married. Admitted December 28th, 1901. Died 2nd January, 1902.

*Family History.*—Patient's mother had a double rupture. Her sister had a rupture which eventually became strangulated and for which she underwent an operation.

*History of Present Illness.*—Three days before day of admission patient noticed pain in left groin on coming downstairs and found that a lump had appeared. The hernia was on this occasion reduced by a doctor, but came down again late at night on the day before admission. On the following day the doctor was again sent for but failed to reduce the hernia, and the patient was admitted to St. Thomas' Hospital at night.

*State on Admission.*—A tense, rather elastic swelling is to be seen and felt in left groin over site of crural canal, about 1 inch in diameter. The swelling is tender on examination, and irreducible, and the patient is suffering a good deal of pain but is not collapsed. Pulse 118.

*Operation, 28th December.*—Sac of recent origin found, containing small loop of congested small gut, partial enterocoele. Sac was torn in reducing contents. Radical cure by Parry's method. Symptoms of obstruction persisted after operation, although 3 enemata gave good results, and flatus was passed. After operation pulse fell to 82 but began to rise again on 4th night.

*Operation, 2nd January.* Abdomen opened through rectus



(left) and the previously herniated loop found to be *partially* strangulated by neck of sac: hence the passage of flatus and the good results of 3 enemata. Patient became very collapsed. Intravenous saline infusion given. Death occurred few hours after operation.

*Post-Mortem Examination.*—Early general peritonitis. Small intestine distended. Point where gut had been strangulated was 24 inches above ileocæcal valve. Below this the bowels were collapsed. Viscera healthy.

EXAMPLES OF THE REDUCTION EN MASSE OF HERNIA WHICH ARE NOT STRANGULATED.

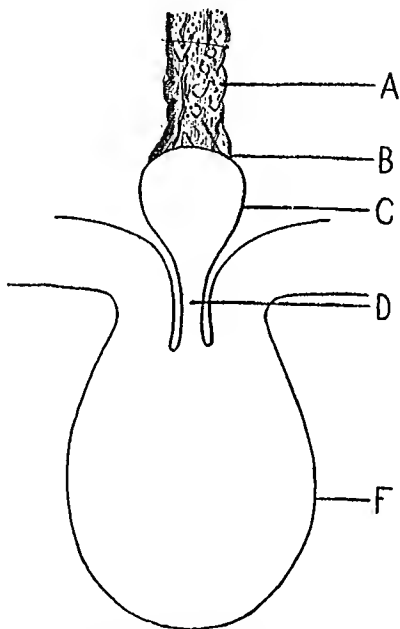
Hitherto it has only been the practice to recognize cases of acute reduction *en masse*, but cases of subacute or chronic reduction *en masse* are plainly recognizable, particularly when the contents of the hernia are other than small bowel. We quote cases to illustrate this.

CASE V.—*Omental Hernia.* Operating upon a young man of 25 years of age in 1905 for a condition diagnosed as a reducible inguinal hernia one of us came across a condition of affairs which gave us the first clue to cases of the subacute or chronic reduction *en masse* of an omental hernia. The hernia "came down" every night and the patient was in the habit of reducing it (*en masse*) and wearing a truss. At the time of the operation the hernia was "reduced." After opening up the inguinal canal, the sac was opened and in it was found a roll of tissue, surrounded with peritoncum, which extended from the fundus of the sac to the abdomen (Fig. 1). On pulling on this cord of tissue a piece of omentum, adherent to its abdominal end, was withdrawn from the abdomen. The mystery was solved; the hernia "was down" (Fig. 2)! It is an obvious inference that the patient was in the habit of reducing this omentum with part of the sac every morning when replacing his hernia, prior to putting on his truss.

We were led to this explanation by finding the curious involution of the sac but the case certainly suggests that similar reduction *en masse* can take place in many instances in which the omentum is adherent to the sac, which suggestion our further observations have confirmed.

*Large Bowel Herniæ.*—When operating on right sided herniæ it is not infrequent to find that the cæcum has slipped down from the abdomen, behind the peritoneum, so that it has no complete covering of peritoneum. It is then termed a hernia *en glissade*. Yet in some of these instances the patients reduce the hernia and part of the sac with it daily, before put-

FIG. 1.



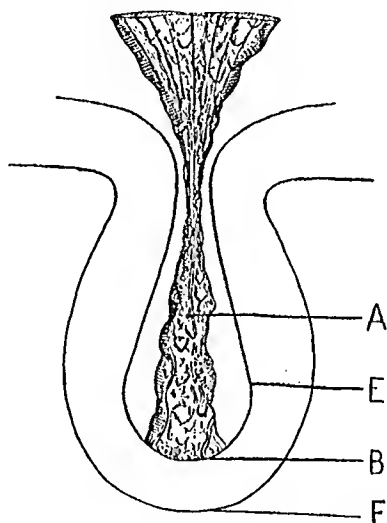
Reduction *en masse* of omental hernia and sac. (A) Omentum; (B) Adhesion between omentum and sac; (C) Inverted and reduced normal sac; (D) The wall inside the part of the sac which remains in the scrotum; (F) It is inverted by the reduction of the omentum (A) and the adhesion (B).

ting on their truss. On the left side a similar condition is found, the lower part of the sigmoid coming down into the hernia when it is incompletely surrounded with peritoneum. In this case also the patients are often in the habit of reducing the hernia *en masse* before putting on the truss. Further than

that, the surgeon when operating removes part of the sac, sews up the rest and reduces the hernia *en masse* before commencing his "radical cure."

Recently we had a good example of this before us. A man came to the "out-patients" at St. Thomas' Hospital with an irreducible inguinal hernia on the left side. He was admitted but allowed to remain in bed as there were no symptoms of strangulation. The hernia became reduced spontaneously.

FIG. 2.



The omental hernia down in the extroverted sac. (A) The omentum; (B) Its adhesion to the fundus of the sac; (E) The hernial sac in the scrotum, uninverted and undisturbed; (F) The scrotum.

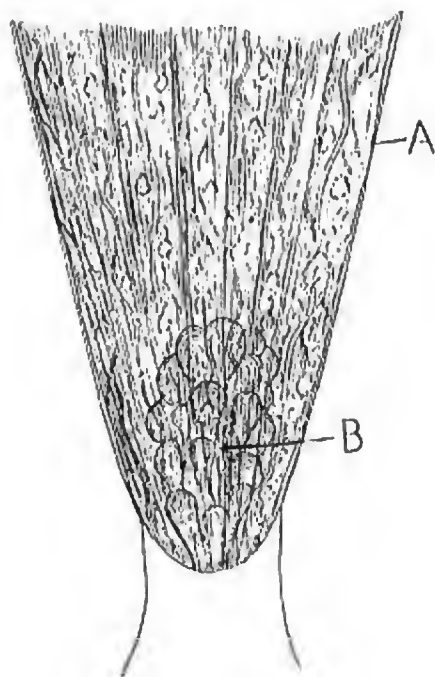
In the out-patients one of us had seen the nontranslucent rupture extending to the bottom of the scrotum. At the operation we only found a sac an inch long! On opening the sac a mass of fat covered with peritoneum and like an appendix epiploica was seen at its neck. By pulling on this mass of fat the large bowel, the colon, was easily brought into view. In this case there can be little doubt that the patient when first

seen, had a hernia *en glissade*, the colon forming part of the wall, extending to the bottom of the scrotum, which became reduced spontaneously. We would also like to urge that the significance of a pad of fat at the neck of the hernia (Fig. 3) is that there is large bowel in the proximity which can, if it has not already, come into the hernia *en glissade*. These pads of fat are not at all infrequently seen during the course of hernia operations and are of some use in putting the surgeon on his guard to avoid the danger of ligaturing part of the large bowel with the sac.

Spontaneous reductions *en masse* are by no means infrequent in children. A number of cases are sent up to the Children's Hospital, Great Ormond Street, as strangulated herniæ; but it is only a small percentage of these which come to operation, the remainder becoming reduced, such as with an ice bag. Considering the frequency with which the cæcum is found in the irreducible herniæ of children, there can be no doubt that some of these cases are examples of the reduction *en masse* of a hernia *en glissade*. Thus there is an intimate connection between all herniæ which arise *en glissade* and the question of their reduction *en masse*.

*Bladder Hernia.*—There is one further viscus to which we would like to direct attention in connection with the reduction *en masse* of parts of unstrangulated herniæ, namely, the bladder. Every surgeon knows that it is quite common to be able to draw the bladder into the sight during an operation for inguinal hernia by traction on the sac. Again it is not uncommon for the bladder to be at or outside the internal abdominal ring; and in certain cases where there has been a definite bladder hernia, the patient has been in the habit of reducing it (*en masse*) before putting on the truss. As an example of this may be quoted a case recently in the Children's Hospital, Great Ormond Street. A little boy had a right sided hernia, perfectly reducible, which used to be replaced in the abdomen, before putting on his truss. At the operation for the radical cure of the hernia, it was found that the protrusion consisted almost entirely of bladder. Hence it was a case of the habitual reduction *en masse* of a bladder hernia.

FIG. 3.



End of fat at neck of sac. (A) The hernial sac which has been slit open; (B) The sub-peritoneal fatty mass at its neck, which indicates the close proximity of the large bowel.

The question may arise as to what distinction we make between the reduction of the contents of an ordinarily reducible hernia and the reduction *en masse* of a subacute or chronic hernia. It is this. In the reduction of the contents of a reducible hernia the contents alone are reduced, the sac remaining outside; whilst in the latter case, both the contents of the sac and the sac are reduced, the sac wholly or partially according to the degree of reduction *en masse* present. The reduction of a hernia *en masse* is most dangerous in acute cases; whilst in subacute or chronic cases it is a beneficial measure; and in some instances of herniæ *en glissade*, it is a recognized method of surgical treatment. In strangulated herniæ it has been recognized for a long time. In non-strangulated herniæ its occurrence has been overlooked and we have urged that illustrations of it will be found most frequently in connection with adherent *omentum*, *large bowel* and *bladder*. In contrast with this the acute forms almost invariably contain *small bowel*.

#### DIAGNOSIS, PROGNOSIS AND TREATMENT.

The danger of reduction *en masse* lies in its not being recognized and its necessitating a further operation. From the 137 cases examined we know that the surgeon or other medical man was responsible for its occurrence in 50 per cent. of the cases. As it occurs through taxis, its occurrence is a warning against the injudicious use of taxis, particularly in small herniæ of recent formation and large herniæ of old standing. We know from the examination of the recorded experiences of others that it is in these two classes of case that the accident most frequently occurs. Further, we know that the patient's own taxis can cause it; but whilst we can influence the doctor, we cannot control the patient. And yet again we know that it can occur spontaneously and would suggest that an important factor in the production of this is the vigorous peristalsis of the bowel above the obstruction, such as in a case of partial enterocele or Richter's hernia, or in any other case where a small knuckle of gut is strangulated. Thus we would suggest that spontaneous reduction *en masse* is most likely to occur in

cases of strangulated femoral, small and recent inguinal and obturator herniæ. Further, we would like to urge the practical difficulty of making a herniotomy or kelotomy in some cases, such as with a small partial enterocele, and the possibility of such cases being reduced *en masse* even at the operation. Several such cases have been recorded in the literature, and in this communication we have reported another because it is not generally appreciated that the accident can happen at an operation! And further, we should add that it is only likely to happen after an operation on a femoral hernia.

The diagnosis of reduction *en masse* can be summed up in the words "the continuance of the signs and symptoms of intestinal obstruction after the apparent reduction of the hernia" by taxis or operation. Such a clinical course is only likely to be the result of intestinal obstruction or peritonitis. And it is often impossible to say which. Still, the treatment is easier to decide than the diagnosis. If the signs and symptoms of obstruction persist after the reduction of a hernia, the abdomen should be opened and the reason why ascertained and treated. This should be done with as little delay as is necessary to make the diagnosis of the persistence of the symptoms.

But all cases are not so easy as the above might lead one to imagine. The reduction *en masse* of a partial enterocele, most likely from a femoral or obturator hernia, may be followed by some relief of the symptoms; the bowels acting and the vomiting ceasing. But in spite of this temporary relief there is no real and lasting improvement. It is sufficient to delay the diagnosis of "unrelieved obstruction" being made before the ensnared bowel is necrosed or beyond recovery, and perhaps the patient may have become too ill to bear and recover from an operation which may be a long one; for it is worse than useless to curtail any steps such as the cleansing of the peritoneal cavity.

An important physical sign in some cases is that the upper part of the inguinal canal on the side of the hernia is indefinitely "full" and not empty.

The proper surgical treatment of these cases is to operate

either by making an incision in the middle line of the abdomen below the umbilicus when the exact diagnosis is uncertain, or if the cause of the illness can be ascertained an incision can be made over the region where the hernia was reduced *en masse*, and especially so if the inguinal canal feels "full." These abdominal incisions can be termed general and local respectively. In the majority of cases the diagnosis is not clear and a general incision is made. A local incision is often adequate for an inguinal hernia but not for a femoral, in which instances the general incision is to be preferred.

If an operation has already been performed and the symptoms of obstruction persist, the general incision is the best.